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An ACCOUNT of some SKULLS discovered at BRANDON, SUFFOLK.

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A. Introductory.

AT Professor Macalister's request, I undertook during the month of July, 1895, to measure and describe this series of sixty-three skulls, then recently secured by him for the Anatomical Museum of Cambridge University. The circumstances under which the skulls were obtained did not allow of my presence at their excavation; but I have visited the spot where the discovery was made, and have gathered all possible information on the matter. Brandon is a village and parish on the borders of Suffolk and Norfolk, which are here separated by the Little Ouse or Brandon River. Lying on the eastern margin of the fens, Brandon has long been noted for its flint quarries, as they are believed to have been worked continuously since the Neolithic Period. The majority of the inhabitants are dark, a feature that contrasts with the general Anglian fairness of Norfolk and Suffolk. Their language and customs are said still to bear evidence of pre-Roman times.^(a) Two Roman camps once lay situated within a very few miles from Brandon. Near them and Brandon ran the Icknield Way, an old road probably built by the Iceni before the Roman invasion.

The skulls were found in a field just outside Brandon within 80 yards from the river. In February, 1894, an infuriated bull tore up the earth at the spot and revealed a skull. No active notice, however, was taken of this discovery until the spring of the following year, when three holes were dug in the sandy soil. The first was crescentic, measuring 18 yards in length, and averaging 3 yards in breadth; the other two holes were smaller, about 8 × 4 yards, and have not hitherto yielded so many skulls as the first. These three holes were dug on the top of a large circular elevation, about 50 yards in diameter, which was surrounded by a depressed area of ground and at no point rose more than 3 feet above the average plain of the grassy meadow. Along the whole extent of the

rise the labourers are fully confident of discovering further human remains.¹ A second elevation lies near it, separated by a slightly depressed area. But in each case the slope is so gentle as to be only noticeable to the observant eye. I cannot find, either in the Ordnance Survey Maps or elsewhere, that the field has borne any name significant of a burial place. Nor have I discovered historical records, local or general, that prove of any assistance. Arrow-heads have been frequently met with in the neighbourhood. Half a mile distant from the field, broken specimens of Roman, British and Samian ware have been found in abundance. Skulls which have never been described and now enjoy private ownership were dug up at Weeting, a few miles from Brandon. Camden makes mention^(b) of the discovery of skulls even nearer to Brandon. The skeletons of the present series were found entire, but it was by no means rare to find parts of the same body separated by some distance. No bones were discovered at a depth exceeding 4 feet. There was a complete absence of display of orientation in burial; it was equally common to find bodies lying over, parallel to or across each other. No ornaments nor any pottery came to light. Large pieces of iron were dug up, but they had so decayed that it was impossible to pronounce on their former use. The soil was sandy, coloured here and there by the rust that had diffused through it. The skeletons of the present series are in remarkably good condition: they include those of men and women which are found in almost equal numbers, of three children and of several horses. In many cases the human calvaria are curiously worn away, even to the diploë, in the form of a ring, as if some heavy instrument had pressed on them. No. 686 has such a character over the right parietal region. No. 708 has a long sickle-shaped groove running from right to left across the lambda and the parietal bones. No. 760 presents a completely circular groove which runs, fillet-like, around the horizontal circumference. A few of the skulls bear holes of which some are of new, others are of old, formation. No. 708 shows a hole in the middle of the right half of the coronal suture; it measures 30×21 mm. and has eroded pits in its neighbourhood. No. 734 has a circular ragged-edged hole, 8×13 mm. below the right squamous suture. No. 761 has a wide, evidently recent gash through the bone on the right of the obelion. No. 759 presents a circular hole above the left occipital condyle. No. 764 has a similar hole on the right squamous bone, 11 mm. in diameter. Of these

¹ Since the above was written, the Cambridge Museum has acquired some additional fifty-eight skulls, which, sharing the general characters of the first find, are not mentioned here save in a few scattered notes.

five skulls which present holes, three are female. I can offer no satisfactory explanation of the holes and annular markings.

Between the skulls of this series there is that general want of resemblance which at once convinces the observer that he has to deal with the representatives of more than one primitive race. There are skulls megaseme and microseme, leptorhine and platyrhine, orthognathous and mesognathous, dolichocephalic and brachycephalic. The burial-ground was that of a tribe or people of impure ethnic character, since between the various types hereafter defined certain skulls of this series show every possible gradation. Inasmuch as there is no historical record concerning these skulls, nor display of orientation in their burial, we may in consideration of discoveries in the neighbourhood assign these remains to a people that lived antecedent to the Saxon invasion. Indeed, there is but one skull (No. 693) in this series¹ that presents in any degree the physical characters of Saxon crania. It has the massive ovoid form, the well-filled appearance, the full, projecting occiput, and heavy jaw with everted angles, which are characteristic of the skulls of Saxon races. If the Brandon skulls date, as there is every reason to believe, from an age prior to the Saxon invasion, the presence of a Saxon in England at this date demonstrates that the Saxon invasion took place more gradually than history would have us conceive, or that Saxons were included in the auxiliary forces introduced by the Romans. Doubtless both these alternatives are true. Even in pre-Roman times, the Iceni were a mixed people. Thus the Roman institution of the Comes Litoris Saxonica becomes fraught with a new meaning. On some such hypotheses, the early Brandon folk may well have received a sprinkling of Saxon settlers along the Icknield Way from the eastern ports.

B. *Descriptive.*

With the exception of a few cases, I have only employed those general measurements and indices which have conclusively proved of value in race-discrimination. I have throughout considered Professor Sergi's energetic protest^(c) against a too implicit reliance on cranial indices when they are unaccompanied by descriptions of the various *normæ*, and I have not hesitated to adopt many of the convenient terms framed by him for the varieties in form of *norma verticalis*. I think that few will be found who consent to the limits to which Professor Sergi pushes his iconoclastic

¹ The further additions to the Brandon skulls include two or three of Saxon-like character.

doctrines; yet I am not disposed to deny the truth of his statement that sexual differences do not really impair nor alter the types under which the crania are classed. Very great experience, however, is necessary before such an admission can be made of actual use in practice.

In grouping the series, I have omitted the six young or distorted skulls (Nos. 681, 697, 701, 706, 711, and 745); these will be considered separately. The normal adult skulls have been divided into three groups, according as they fall within the limits of brachy-, mesati-, or dolicho-cephaly. On the whole, this seems the least unreliable method of grouping for the discrimination of race-characters, although the arbitrariness with which the mesaticephalic group is formed may seem almost Draconian.

Deducting the young, distorted and unmeasurable skulls, we have a series of fifty-one skulls remaining, of which five belong to the brachycephalic, twenty-three to the mesaticephalic, and twenty-three to the dolichocephalic groups. Of the whole series it can only be remarked that the glabella is never prominent, that the supraorbital ridges and glabella in no case form a ridge across the skull, and that a torus is never present. The groups will now be considered in detail.

(a) *The brachycephalic group.*

Of the five skulls¹ four are male, and one is female. In only three are the facial measurements possible.

Calvarium.—The frontal region is broad and the frontal eminences are raised, so that the forehead is full and well-developed. The parietal eminences are also placed high up on the skull, causing the norma verticalis to have a regularly ovoid or ellipsoid form. The zygomatic arches are just concealed in a vertical view. Except for a slight rise in the region of the bregma, the profile of the skull describes an even, uninterrupted arc from the ophryon to the opisthion. The skull is very low and somewhat flattened; the occiput is not prominent. Viewed posteriorly, the skull has a much flattened pentagonal form. The lateral walls of the skull project but slightly; the whole calvarium is massive, but neither the mastoid nor other muscular processes are prominent. The maximum occipital point lies about two centimetres above the union. The conceptacula cerebelli are regular and almost horizontal.

Face.—The face is very short and broad. The basi-alveolar

¹ A proportionally small number of brachycephalic skulls occur in the more recent additions to this collection.

length is most remarkably short. The orbits are broad, and the infraorbital portions of the maxilla are deeply sunk, causing the malar bones to seem very prominent. The zygomatic processes of the temporal bones have an exceptionally wide splay. The shape of the nasal bones and of the apertura pyriformis is not constant; it tends to a rather flattened form of nose and an indistinct inferior margin of the aperture. The palate is small and generally elliptical. The teeth are large, a third molar is present. The mandible is wide and heavy, with everted angles and a small chin.

(b) *The dolichocephalic group.*

Of these twenty-three skulls, twelve are male and eleven female.

Calvarium.—The frontal region is narrow and ill-filled, so that the zygomatic arches which project slightly outwards are visible in a vertical view of the skull. Among the most dolichocephalic skulls there is a tendency to scaphocephaly. Two forms of norma verticalis occur, which depend for their difference on the shape of the always prominent and capsular occiput. The latter varies between (1) an extremely pointed form which gives the norma verticalis an *ellipsoid* shape, and (2) a more rounded, fuller form which causes the roof to appear somewhat coffin-shaped, or, in Professor Sergi's nomenclature, *rhomboid*. The main feature associated with the rhomboid skull is a practically horizontal inferior plane of the occipital bone. The sloping, pointed appearance of the posterior end of the ellipsoid skull is not confined to the occipital bone, but often starts from the parietal tubera, and thus causes the outline in profile view to descend with great suddenness from these eminences to the most projecting point of the occiput. The latter point lies a few centimetres above the inion. The skulls are in neither case markedly high. There is some slight flattening in the region of the bregma. The mastoid processes are small.

Fac.—The facial length and breadth are variable. The malar bones are large and especially rough and prominent at the maxillo-malar suture. The nasion lies in an often deep depression, overhung by the supraorbital ridges which are strongly developed only on the inner side of the orbits immediately external to the flattened glabella. The nasal bones are thin and generally long. At their free extremity they are arched concavely forwards. The nose is moderately, at times markedly, ridged. The alveolar border of the external nares is generally ill-marked. The mandible is slight, the coronoid process large, and the angle of the jaw non-everted. The prominence of the well-marked

triangular chin is emphasised by a flattening of that part of the alveolar arch which carries the lower incisor and canine teeth. The teeth, poorly preserved, are of medium size; the third molar is never absent. The teeth are worn unusually flat. The palate is always highly arched and almost U-shaped.

(c) *Mesaticephalic group.*

Of these twenty-three skulls, twelve belong to males, eleven to females. As a group, they are intermediate between the members of the brachycephalic and dolichocephalic groups. Since therefore they present no significant type of their own, I have found myself quite unable to describe any features common to them apart from those already mentioned as common to the whole series. I append the sub-groups into which I have divided the mesaticephalic skulls.

(a) The skull No. 693 stands alone in being far more massive, with stouter malar bones, a more arched calvarium, and a more capsular occiput than any skulls in the brachycephalic group. It is the only skull of probably Saxon origin.¹

(β) Several skulls are obviously of mixed type. In its calvarial form and measurements one, No. 686, appears to correspond with the sub-group (γ), but in its facial measurements agrees closely with the sub-group (δ). Other crania, Nos. 687, 735, and 757, also impure, on the whole fall under sub-group (γ).

(γ) The male skull No. 758, and the female skulls, Nos. 701, 709, 710, 746 and 759, present a general resemblance to the ellipsoid division of the dolichocephalic group. The female skulls, Nos. 685, 694 and 734, and with less certainty No. 760, fall in the same sub-group (δ).

(δ) Three male crania, Nos. 714, 743, and 739, show a general agreement to those of the brachycephalic group above described.

(ε) The two very long, broad, capacious but imperfect calvaria Nos. 698, 699, with wide frontal regions, bear a general mutual resemblance.

(ζ) The male skull, No. 703, and calvarium, No. 698, are very like each other in cranial measurements, both of them being on the verge of dolichocephaly. The receding forehead of the latter bears evidence, however, of possible distortion. In another connection I shall give a further description of the former skull.

(η) The female calvarium of rhomboid form No. 708 resembles that division of the dolichocephalic group.

¹ See previous note on p. 115.

(d) Young and distorted skulls.

The young skulls are Nos. 681, 697, and 711.¹ The two latter are exceedingly like each other, with probably a year's difference in age; the one is cutting, the other has just cut its first molar tooth. No. 681 is an older, almost definitely formed cranium of rhomboid form in vertical view, and of markedly pentagonal form in occipital view. The third molar tooth is uncut; the forehead recedes, the muscular processes are small.

The obviously distorted skulls are Nos. 700, 706, 745. The first is exceedingly scaphocephalic, but is so incomplete as to render a full description impossible. It is interesting to note that the sagittal, coronal and lambdoidal sutures are all well-marked. No. 706 presents an irregular posthumous distortion. In No. 745 the coronal suture is absent except at the stephanion, the sagittal suture is almost obliterated, and there are obscure traces of an epactal bone; the skull is so distorted that the maximum point of elevation of the calvarium lies in front of the vertical plane between the two pteria.

THE SUTURES.

With the following few exceptions, the sutures assume a normal course and character. In No. 676, however, they are strikingly simple; they are simple at the glabella in Nos. 687 and 759. The metopic suture is present, completely in Nos. 695, 713, 737 and 764, and partially in Nos. 688 and 693. The basilar suture is open in No. 707.

WORMIAN BONES.

No wormian bones at the pterion (*ossa pterica*) occur in the skulls of this series. They lie most commonly along the course of the lambdoid suture. Two skulls, Nos. 732 and 745, have an obscurely defined bone at the apex of the lambda. Nos. 710 and 737 bear epactal bones measuring 10×21 mm. and 38×34 mm. respectively; the former shows wormian bones near the right asterion. Immediately below the apex of the lambda there are four small bones in No. 687, three on the left, and one on the right arm of the lambdoid suture. No. 714 bears a bone, 14×19 mm., to the right, and No. 734, two large bones to the left of the apex of the lambda. The latter also has a bone at the left, and two at the right asterion. In No. 688, a bone occurs in the left arm of the lambdoid suture; in No. 735, three small bones are present on the right, and five on the left arm of the same suture. At the level of the

¹ Three or four young skulls are included in the results of more recent excavations.

inion in No. 714, there is a small bone on each arm of the lambdoid suture. Below the right asterion, in No. 733, a bone occurs. At the left asterion No. 689 presents a wormian bone. In No. 693 the bregma bears a small bone; another is also situated at the right asterion; just above the right asterion a small bone occurs in No. 744.

THE PTERION.

Where the sutures are not obliterated, the most common form is the pterion in H. No. 694 has a pterion in K on each side. In the young skull, No. 681, the union of the frontal and temporal bones on each side prevents the sphenoidal and parietal bones from meeting.

THE TEETH.

In the short palates which are specially prevalent in brachycephalic skulls, the teeth tend to become crowded out. In No. 679, the second incisor had never been developed, while the lower third molar teeth are pushed back so far that they lie in the same vertical plane with the coronoid process.

THE INDICES.

(i.) *The Cranial Breadth-Index.*

This varies within the limits of 71.2 to 81.1. The brachycephalic skulls are not so numerous as the dolichocephalic, nor is their character so intensified. They are strongly microseme (78–82), are leptorhine or faintly mesorhine and are orthognathous.

(ii.) *The Cranial Height-Index.*

This ranges from 64.1 to 75.4. Thus no skull is distinctly akrocephalic. Of forty skulls, eleven male, and six female skulls are tapeinocephalic, while thirteen male and ten female skulls are metriocephalic. Among the tapeinocephalic the ratio of frequency of the male and female skulls is 9 : 7, and among the metriocephalic is 6 : 7. From this calculation follows the rarely drawn conclusion that in the present series the female skulls are somewhat higher than the male. In only two cases (Nos. 758 and 731) are the height- and breadth-indices equal. In one instance only, No. 678, does the height-index exceed the breadth-index. The most tapeinocephalic skulls are dolichocephalic.

(iii.) *The Facial Indices of Kollmann.*

In a certain number of cases the condition of the zygomatic arches rendered calculation of these indices impossible. In other cases it was a matter of some difficulty to fit the lower.

jaw to the skull, a long search being often necessary before a skull could be matched with its strayed jaw. The upper facial index varies from 48·4 to 62·6, the total facial index from 83·9 to 90·1: the latter index was obtainable only in six skulls. Relying, therefore, on the upper facial index, I find that the broad-faced skulls are confined to the brachycephalic and the long-faced to the dolichocephalic group.

(iv.) *The Nasal Index.*

This varies from 43·4 to 62·8. Adopting the method of seriation, I find that of twenty-eight adult skulls, fourteen fall into the leptorhine, nine into the mesorhine, and five into the platyrhine group. Nineteen of these skulls have a nasal index between 48 and 52. The two young skulls, Nos. 697 and 711, present an index of 52·8 and 56·8 respectively. The most platyrhine skulls are dolichocephalic, tapeinocephalic and mesoseme; they much resemble each other. In the platyrhine group the male skulls predominate, 4 : 1.

(v.) *The Orbital Index.*

This ranges within even wider limits than those of the nasal index—from 78 to 100. Of twenty-six instances, sixteen male and ten female skulls, seven fall into the megaseme, seven into the microseme, and twelve into the mesoseme group. The ratio of frequency in the male and female skulls in the microseme group is 31 : 20, in the mesoseme group 63 : 20, and in the megaseme group 1 : 10. Only one microseme skull, No. 686, approaches dolichocephaly. This skull is, as has been before mentioned, probably of very mixed descent. The most megaseme skulls are dolichocephalic and orthognathic.

(vi.) *The Gnathic Index of Flower.*

In the orthognathic brachycephalic skulls, Nos. 679, 687, 688, (Bi. = 78·6—81·8), the basi-alveolar line has the remarkably short length of 84–85 mm. The gnathic index throughout the whole series ranges between 86·7 and 105·3. Only one skull, No. 735, a male, is decidedly prognathous (Gn. i. = 105·3). Of twenty-five adult undistorted skulls seventeen—thirteen male and four female—are orthognathous, and seven—two male and five female—are mesognathous. The gnathic index of eleven skulls falls within the limits 91–96. The mesognathic skulls are all dolichocephalic or nearly so, very tapeinocephalic, and never leptorhine nor microseme.

(vii.) *The Palatal Index.*

In relatively few cases was this index obtainable.

C. *Critical.*

My first impression was that the differentiation of the rhomboid from the ellipsoid form of dolichocephalic crania would prove valueless from the standpoint of race-discrimination. Subsequent constant inspection of the skulls have convinced me that, although there may be a few skulls of pure descent, the majority of the dolichocephalic group belong to no uniform race of men, but show that variety and interchangeability of indices and forms which are so characteristic of mixed peoples. I set to work, therefore, to dissect out from this group elements of British, Roman, Gallic, Saxon and other Teutonic or Celtic nature.

I find that the skull No. 703 and the calvarium No. 698 agree in nearly all physical signs with those of the Long Barrow race; they particularly resemble two skulls of this race of which one was found at Rodmarton, Gloucestershire, and is figured in the "*Crania Britannica*" (Plate 59), and the other was described by Dr. Garson in vol. xxii of this Journal among the skulls of Howe Hill Barrow, Yorkshire. The Howe Hill skulls, lent to the Cambridge Museum, were unfortunately recalled just previous to my discovery of this resemblance. The close correspondence in measurements is readily noticeable.

SKULL FROM.				Length.	Breadth.	Basio-bregmatic height.	Minimum frontal breadth.	Stephanic breadth.	Frontal arc.	Parietal arc.
1.	Rodmarton	..	..	201	144	139	?	?	136	143
2.	Howe Barrow, M	..	..	194	145	133	100	129	126	139
3.	Brandon, 698	..	..	194	146	133	?	?	125	128
4.	Brandon, 703	..	..	194	145	133	92	112	131	131

	Occipital arc.	Nasio-opisthic length.	Foramen magnum length.	Horizontal circumference.	Auriculo-bregmatic curve.	Bi-auricular curve.	Nasio-mental length.	Nasio-alveolar length.	Ext. bi-orbital length.
1*	131	410	?	556	?	?	114	?	?
2	114	379	42	540	309	121	114	64	109
3	127	380	35	540	323	127	?	?	?
4	124	(386)	?	540	323	123	?	82	105

	Bi-zygomatic breadth.	Maximum maxillary breadth.	Minimum maxillary breadth.	Bigonial breadth.	Inter-orbital breadth.	Orbital breadth.	Orbital length.	Nasal length.	Nasal breadth.
1*	132	?	?	?	?	?	?	?	?
2	134	100	63	105	(23)	40	33	52	24
3	?	?	?	?	?	?	?	?	?
4	131	98	64	102	24	39	33	53	23

	Palatal length.	Palatal breadth.	Cranial breadth index.	Cranial height index.	Upper facial index.	Nasal index.	Stephano- zygomatic index.	Gnathic index.	Orbital index.
1*	?	?	72	69	?	?	?	?	?
2	54	?	74·7	68·6	?	46·2	96·3	94·2	82·5
3	?	?	75·3	?	?	?	?	?	?
4	53	66	74·7	68·6	62·6	43·6	?	?	84·6

* Compare the first line for an explanation of the skulls.

Nor is the relation between these skulls only discernible in measurement. A reference to the engraving of the Rodmarton skull figured in the "Thesaurus Craniorum" and in the "Crania Britannica" shows that in every point of form the Brandon skull No. 703 offers the closest resemblance to it. This fact may go some way towards establishing the antiquity of the present series of crania, as the existence of so pure a Long-Barrow stock in later years amid an ethnically impure race is at least doubtful.

But this is not the only type of Long Barrow skulls; indeed it is the less familiar of the two which Dr. Garson has been able to differentiate. In the second type the measurements of the height and length of the skull are rather less, the whole cranium is less narrow, the face rather wedge-shaped, and the chin more prominent, while the arch of the skull is more pointed in *norma facialis* and the outline is more ellipsoid in *norma verticalis*. Undoubtedly two of the dolichocephalic Brandon crania, Nos. 676 and 742, belong to this second Long Barrow type. Save that the rhomboid form of the *norma verticalis* is gently persistent, they agree in every one of the particulars just enunciated.

There is no trace of the elements of a Round Barrow race among the Brandon crania. Neither in cephalic breadth-index nor in cephalic height-index do they show any approach to the remarkable hypsibrachycephaly of the Round Barrow skulls. The extreme shortness of the cranium, the height and degree of projection of the parietal eminences, the prominence of glabella and chin—all characteristics of the Round Barrow race—are wanting in the five brachycephalic members of this series.¹

The origin of the Round Barrow race has been much debated from the earliest times of anthropological history. In particular they have been identified by some with the Cimbri, by others with the Belgæ. Our knowledge of the Cimbri, indeed, is no less

¹ They are also absent in those skulls which have come to light since this paper was written.

uncertain. Tacitus speaks of them as inhabiting the Chersonese, *i.e.*, Jutland and Schleswig-Holstein. They have been variously described as Teutonic or Celtic. With greater precision others have associated them with the neolithic Danes. Those who assert that the Belgæ were the Round Barrow race attribute to them the introduction of bronze into England. Now whatever be the origin of this race, whether it be of Cimbrian or of some other descent, it was with fair certainty not Belgic. The provinces formerly occupied by the Belgæ are now inhabited, as M. Collignon has shown, by the longest-headed people of France. Neolithic discoveries in this region point to the same conclusion. Therefore, if any migration of Belgic Gauls took place at or before the Roman invasion, it was a wash not of brachycephalic, but of dolichocephalic people that the British shores received. Dr. Verneau, working on the dolmen at Les Mureaux in the canton of Meulan and in the old Belgic province, has published^(d) measurements and figures of various skulls. These I have compared with the Brandon series in the hope of discovering some traces of resemblance, if ever any Belgic dolichocephalic folk penetrated into Suffolk. So far as comparisons are possible without actual view of both collections, I have been unable to establish any relation between them.

The brachycephalic skulls of the present series are absolutely as distinct from other Gallic skulls, with which I have compared them, as they are from the British Round Barrow type. I have been equally unsuccessful in an endeavour to find traces of a true Roman or Italian element among them. Neither in the Nicolucci collection of the Museum at the Royal College of Surgeons, nor among the skulls described by Barnard Davis in the "Thesaurus Craniorum," have I found Italian skulls that show noteworthy resemblance to the Brandon series. The latter do not possess the delicate aquiline nose, the prominent supraciliary ridges, the square face and jaw which are characteristic of the ancient Roman race. Of what race, then, are these brachycephalic Brandon skulls? Decision so far has been guided solely by the method of exclusion; we are in a position to say what they probably are *not*. Beyond criticism of this negative character I have nothing to offer. Perhaps I may add one note which I find that I have made. In the Cambridge Museum there are several skulls styled Romano-British, resembling the brachycephalic skulls of the present series. They may be the results of similar conditions of intermarriage.

There is considerable evidence to show that a large Germanic population was introduced at the Roman invasion. In many cases, at least, the German chiefs were allies of the Romans

and with armed followers were brought over to England, being entrusted with the conquest of various parts of the country. Latham quotes^(e) from a panegyric of Mamertius to prove that as early as in the reign of Diocletian (284–305 A.D.) there were Germans in Britain. Moreover, in the reign of Constantine the younger (337–340 A.D.), Crocus, an Alemannic king, was proclaimed emperor at York. Still later, within twenty miles of Brandon, Buckenham in Norfolk was probably the settlement of the Bucinobantes (about 372 A.D.), an Alemannic tribe who with their chief Fraomar landed in Britain under the orders of Valentinian. Ammianus Marcellinus (fl. 380 A.D.) locates the home of the Bucinobantes opposite Mainz on the right bank of the Rhine, and states that Fraomar was given the authority of a tribune in England (Bk. xxix, chap. 4). Tacitus again speaks of certain German tribes that had fought (69 A.D.) with great bravery in Britain ("Hist.," iv., 12). Indeed, extending from Cæsar's mention ("de Bello Gallico," v, 12) of the migration of continental tribes into Britain down to the times of the Anglo-Saxon invasion, ample evidence exists to show that from a very early date various Germanic peoples began to settle in this country.

The Alemannic skulls conform to a type which at the hands of Germanic anthropologists has received the name, *Reihen-gräber* or Grave-Row. I have been impressed with the likeness of certain skulls in the present series to many of the old Grave-Row type, and I venture to publish the results of my comparison, seeing how near to Brandon an Alemannic tribe had probably once settled. So far as I know, it is the first attempt to establish a definite relation between these Alemannic tribes and the early people of Britain. The characteristics of the Grave-Row type are summed up by Ecker^(f); they are in every way applicable to the ellipsoid division of the dolichocephalic Brandon skulls. The cranium, he says, is long, the forehead rather narrow and frequently low; the superciliary arches are generally well-developed, the vault is either flat or rises from the temporal crest to the sagittal suture like the sides of a roof; the parietal tubera are insignificant except in children and women. "Above all the marked development of the occiput is especially characteristic." The great occipital projection, he continues, is in the form either of a cone or of a pyramid. The maximum occipital point lies above and behind the external occipital protuberance. The infranuchal plane of the occiput is nearly horizontal.

In thus condensing Ecker's description I feel that I am merely re-stating the characters of the ellipsoid group of dolichocephalic skulls. I pass over the work of v. Hölder, whose

conclusions are substantially those of Ecker, and come to the more exhaustive papers of Gildemeister. This anthropologist divides the Reihengräber type into two divisions, according as the parietal eminences are strongly or feebly developed. In certain features the Brandon skulls appear to agree with the one division, in others with the second division which Gildemeister, to my mind somewhat arbitrarily, has thus made. Like Ecker,^(g) he lays stress on the absolutely peculiar prominence of the occiput, the height of the orbits, the delicacy of the upper jaw, the length of the palate and the degree of orthognathism, features all of which are noticeable to a varying extent in the ellipsoid group of the present series. Out of the seven skulls (three male, Nos. 713, 736, 738, and four female, Nos. 709, 710, 746, 759), which perhaps most markedly bear the Grave-Row or "Batavian"¹ characteristics, not one allows of the usual measurements being completely taken. I am unable, therefore, to present collaterally the indices of the Brandon skulls with those of the Alemannic crania. But to my mind there is little lost by this, since the averages deduced by His, Ecker, v. Hölder and Virchow from their respective measurements differ from each other considerably. The average cephalic index of the type is variously computed to be 70·7, 71·3, 72 and 74·9. The height-index ranges from 67 to 78·2. Lastly Gildemeister shows three female skulls in the Bremen collection which have a nasal index of 54·0, 63·1, 55·0 respectively. However, in spite of the obvious admixture of alien blood in later times, there is every reason to believe that the Grave-Row type, which so many anthropologists have emphasised, formerly existed pure. The types which Gildemeister figures may therefore be accepted as genuine, in spite of the subsequent penetration of the allied Saxon and of eastern elements. I venture to say that the outlines of these skulls as seen in the accompanying plate convince one with far greater eloquence than would a column of indices and measurements.

History and physical anthropology tend thus to show the settlement of Alemannic tribes at Brandon. Beddoe speaks of the Alemannic as a fair-haired people sprung from a stock common to the Saxons and Franks. Now dark and red hair has also been found in Alemannic graves. The predominance of black hair in Brandon at the present day would therefore lead one to conclude that the pure Alemanni had a high index of nigrescence or that the dark-haired British have prevailed over their fair invaders.

¹ Except that they are lower and have a more prominent temporo-parietal region, the "Batavian" resembles the Grave-Row types.

MEASUREMENTS OF THE SKULLS.

SKULL NUMBER.	676	677	678	679	680	681	682	686	687	688	689	690	691	692	693	694	695	696	697	698	699	701	703	705	703	707	708	709	710	711	713	714	732	733	731	735	736	737	738	739	741	742	743	744	745	746	756	757	758	759	760	761	762	763	764	685	
Sex or Age	fem.	fem.	male.	male.	fem.	young.	male.	male.	fem.	male.	fem.	fem.	male.	male.	male.	fem.	fem.	fem.	child.	male.	male.	fem.	male.	male.	child.	fem.	fem.	fem.	fem.	child.	male.	male.	male.	fem.	fem.	male.	male.	male.	male.	male.	fem.	male.	fem.	male.	fem.	male.	fem.	male.	fem.	male.	fem.	fem.					
Breadth	136	132	130	145	135	134	133	141	136	148	(146)	130	140	(130)	145	133	(128)	(146)	128	146	149	139	145	146	(140)	(134)	139	(132)	140	129	(140)	143	141	131	(134)	144	142	135	(133)	(144)	142	136	(146)	(134)	141	140	138	147	139	142	144	134	131	144	134	?	
Length	191	182	175	180	184	175	182	188	173	181	180	181	(192)	179	186	177	175	180	163	194	196	179	194	180	172	181	182	188	186	168	189	181	189	177	177	184	191	186	192	184	192	187	(184)	184	176	186	175	187	185	188	193	187	178	195	180	191	
Basio-bregmatic height .. }	131	127	132	132	118	125	123	135	125	124	?	127	?	121	136	127	131	?	?	133	?	132	(133)	?	?	130	127	?	123	?	128	128	142	123	132	121	130	129	134	?	142	126	?	?	132	127	129	126	139	132	130	127	128	136	128	?	
Nasialveolar height ..	71	62	64	60	65	60	(60)	68	63	65	64	(63)	?	?	66	?	?	?	(51)	?	?	?	82	?	?	58	?	?	?	52	65	68	70	62	?	70	?	64	?	?	77	69	?	?	67	?	?	70	65	?	75	(60)	63	76	62	73	
Nasiomental length ..	116	?	?	104	?	99	?	111	107	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	93	?	?	?	?	?	?	?	?	113	?	109	?	?	?	?	?	?	?	?	(114)	109	?	?	?	?	?	?	?			
Bizygomatic breadth	127	(119)	(126)	124	(123)	112	?	131	(117)	131	(128)	129	?	?	(140)	?	?	?	(96)	?	?	?	131	?	?	(111)	?	?	?	(102)	?	(132)	(138)	118	?	(127)	?	126	?	?	(132)	130	?	?	(128)	?	?	128	116	?	130	?	(129)	(128)	(119)	?	
Basialveolar length ..	99	101	92	85	(98)	87	94	97	85	84	?	(88)	?	?	92	?	?	?	?	?	?	?	?	?	?	88	?	?	?	?	91	93	97	99	?	99	?	(93)	?	?	96	95	?	?	89	?	?	99	101	?	88	(94)	93	94	92	?	
Basionasal length ..	100	(99)	100	98	97	91	(58)	105	89	92	?	95	?	?	103	95	94	?	?	?	?	?	?	?	?	95	?	?	?	?	103	93	110	99	99	94	?	101	105	?	109	103	?	?	93	(91)	?	99	98	99	98	99	95	101	93	?	
Orbital height ..	35	32	35	28	37	30	33	$\left\{ \begin{smallmatrix} 33 (r) \\ 36 (l) \end{smallmatrix} \right\}$	34	33	36	32	?	?	34	?	?	?	31	?	?	?	33	?	?	34	?	?	?	?	31	35	32	$\left\{ \begin{smallmatrix} 35 (r) \\ 33 (l) \end{smallmatrix} \right\}$	33	?	33	?	33	?	?	34	34	?	?	33	?	?	34	31	?	39	33	31	35	32	37
Orbital breadth ..	39	38	39	36	41	36	(39)	40	37	40	42	37	?	?	41	?	?	?	31	?	?	?	39	?	?	37	?	?	?	?	33	(36)	39	38	38	?	38	?	39	?	?	40	40	?	?	39	?	?	39	(37)	?	39	37	39	41	35	42
Nasal height ..	49	45	50	43	51	41	43	49	46	50	51	48	?	?	50	?	?	?	36	?	?	?	53	?	?	45	?	?	?	?	37	48	48	52	48	?	52	?	49	?	?	56	50	?	?	53	?	?	(49)	(49)	?	53	47	47	51	47	49
Nasal breadth ..	23	28	24	21	26	22	27	27	21	25	23	23	?	?	28	?	?	?	19	?	?	?	23	?	?	22	?	?	?	?	21	22	26	25	23	?	23	?	23	?	?	25	25	?	?	24	?	?	(23)	(25)	?	24	(25)	23	23	24	23
Palatal length ..	?	51	49	47	43	(48)	?	48	50	44	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	44	?	?	?	41	?	(51)	49	54	?	55	?	?	?	?	?	?	?	?	?	54	47	?	?	?	53	?	?	50			
Palatal breadth ..	?	63	62	59	(57)	54	?	65	56	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	58	?	?	?	51	?	(66)	63	59	?	63	?	?	?	?	?	?	?	?	?	?	57	(60)	?	?	?	61	?	?	58		
Capacity in c.c. ..	?	?	?	1420	1230	1270	1200	1550	1320	1290	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	1320	1500	1190	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?		

INDICES.

Cranial breadth index	71.2	72.5	74.3	80.6	73.4	76.6	73.1	75.0	78.6	81.8	(81.1)	71.8	(72.9)	(72.6)	78.0	75.1	73.1	(81.1)	78.5	75.3	76	77.7	74.7	81.1	(81.4)	(74.0)	76.4	76.3	75.3	76.8	(74.1)	79.0	74.6	74.0	(75.7)	78.3	74.3	72.6	(70.8)	(78.3)	74.0	72.7	(79.3)	(72.8)	80.1	75.3	78.9	78.6	75.1	75.5	74.6	71.7	73.6	73.8	74.4	?																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Cranial height index..	68.6	69.8	75.4	73.3	64.1	71.4	67.6	71.5	72.3	68.5	?	70.2	?	67.6	73.1	71.8	74.9	?	?	68.6	?	73.7	(68.6)	?	?	71.8	69.8	?	66.1	?	67.7	70.7	75.1	69.5	74.6	65.8	68.1	69.4	69.8	?	74.0	67.4	?	?	75.0	68.3	73.7	67.4	75.1	70.2	67.4	67.9	71.9	69.7	71.1	?																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Total facial index ..	90.1	?	?	83.9	?	88.4	?	84.7	(91.5)	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	(83.8)	?	?	?	?	?	?	?	?	?	(89.0)	?	86.4	?	?	(91.7)	83.9	?	?	?	?	?	(89.0)	?	?	?	?	?	?	?	?	?																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																													
Upper facial index ..	55.9	(52.1)	(50.8)	48.4	(52.8)	53.6	?	51.9	(53.8)	49.6	(50.0)	(48.8)	?	?	(47.1)	?	?	?	(53.1)	?	?	?	62.6	?	?	(52.3)	?	?	?	(51)	?	(51.5)	(50.7)	52.2	?	(55.1)	?	50.8	?	?	(58.3)	53.1	?	?	(52.3)	?	?	54.7	?	?	57.7	?	(48.8)	(59.4)	(51.3)	?																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Gnathic index ..	99.0	102.0	92.0	86.7	(101)	95.6	(95.9)	92.4	95.5	91.3	?	(92.6)	?	?	92.0	?	?	?	?	?	?	?	?	?	?	92.6	?	?	?	?	88.3	94.9	88.2	100.0	?	105.3	?	(92.1)	?	?	88.1	92.2	?	?	95.7	?	?	100.0	103.1	?	89.8	(94.9)	97.9	93.1	98.9	?																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Orbital index..	89.7	84.2	89.7	78.0	90.2	83.3	(84.6)	82.5	91.9	82.5	85.7	86.5	?	?	82.9	?	?	?	100.0	?	?	?	84.6	?	?	91.9	?	?	?	93.9	(97.2)	82.0	89.5	86.5	?	86.8	?	84.6	?	?	85.0	85.0	?	?	84.6	?	?	87.2	(83.8)	?	100.0	89.2	79.5	85.4	91.4	88.1																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Nasal index ..	46.9	62.2	48.0	48.8	51.0	53.7	62.8	55.1	45.7	50.0	45.1	47.9	?	?	56.0	?	?	?	52.8	?	?	?	43.4	?	?	48.9	?	?	?	56.8	45.8	54.2	48.2	47.9	?	44.2	?	46.9	?	?	44.6	50.0	?	?	45.3	?	?	(46.9)	(51.0)	?	45.3	(53.2)	48.9	45.1	51.1	46.9																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																														
Palatal index ..	?	123.5	126.5	125.5	(118.7)	(112.5)	?	135.4	112.0	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	(129.4)	128.6	109.3	?	114.5	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?	?

SUMMARY.

- (1) The brachycephalic skulls, which are orthognathous, microseme and leptorhine, agree most closely with the "Romano-British type" which is to be found throughout England in old Roman settlements.
- (2) The dolichocephalic skulls resolve themselves into the Long Barrow types (of Garson) and the Reihengräber types (of Gildemeister).
- (3) The platyrrhine, mesognathous, mesoseme group of subdolichocephalic skulls may owe its occurrence to the appearance of Slaves concomitant with the Roman invasion of Britain.
- (4) There is not more than one definitely Saxon skull in the series.
- (5) The larger number of skulls exhibit characters intermediate between these various types. The burial-ground belonged, therefore, to a people which had for some time been living in a state of friendship and intermarriage, although composed of such ethnically diverse races as have been dissected out. Villages of the neighbourhood retain to this day evidences of a once prevalent system of strict endogamy. The existence of this custom induces the anthropologist to place greater reliance in his conclusions, especially when, as in the present series, the proof of the antiquity of the skulls is extremely unsatisfactory.

For allowing me the material for this paper, and for ever-ready and valued help, I have to express my sincere gratitude to Professor Macalister.

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- (b) "Britannia." By Camden. (Londinii, 1586.)
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- (d) "L'Allée Couverte des Mureaux." By Dr. Verneau. ("L'Anthropologie," 1890.)
- (e) "The Ethnology of the British Isles." By R. G. Latham. (London, 1852.)
- (f) "Crania Germanica meridionalis occidentalis." By Dr. A. Ecker. (Freiburg, 1865.)
- (g) "Ein Betrag zur Kenntniss norddeutscher Schädelformen." By Dr. Gildemeister. ("Archiv f. Anth.," 1878.)



Explanation of the Plate.

FIG. I.—No. 736 of the Brandon skulls.

FIG. II.—A variety of the Grave-Row type.

FIG. III.—No. 760 of the Brandon skulls.

FIG. IV.—The "Batavian" type.

FIGS. II and IV are copied from Gildemeister's paper (*loc. cit.*). They are also to be found in Beddoe's "Races of Britain" (pp. 46, 47).

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